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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,040	03/11/2004	Toru Ikeda	Q80312	4666
23373	7590	10/06/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			CASTRO, ARNOLD	
			ART UNIT	PAPER NUMBER
			3747	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,040

Applicant(s)

IKEDA, TORU

Examiner

Arnold Castro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/11/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Cabis et al. (US/6,208,131).

Cabis discloses an ignition control apparatus for an internal combustion engine, comprising: an ignition circuit provided in correspondence to a cylinder of said internal combustion engine; a rotor rotatable in synchronism with rotation of a crank shaft of said internal combustion engine; a plurality of projections provided on and along an outer periphery of said rotor with a predetermined angular distance therebetween; a rotation sensor disposed in opposition to said plurality of projections; and an ignition timing control circuit for fetching as a reference angular position signal a rotation sensor signal generated by said rotation sensor every time said projection is detected, to thereby output a driving signal to said ignition circuit, wherein said ignition timing control circuit includes: timer ignition control means for an ordinary operation mode of said internal combustion engine; and retarded ignition control means for an operation range in which rotation speed of said internal combustion engine is lower than the rotation speed in said ordinary operation mode, wherein said retarded ignition control means includes: period measuring means for measuring a period of a specific interval of said rotation sensor signal; and arithmetic means for generating said driving signal in dependence on the period of said specific interval and validating a succeeding rotation sensor signal generated in succession to said specific interval, and wherein said arithmetic means includes: expectation period setting means for setting on the basis of the period of said specific interval an expectation period during which said succeeding rotation sensor signal is expected to be generated and accepted when said internal combustion engine is operating in a forward rotation mode, to thereby validate only the succeeding rotation sensor signal that is inputted during said expectation period.

Cabis states :

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Preferably, the position indicators may be positioned and arranged such that the angular extent between the position indicators is a factor of the extent between the second position indicator to be sensed in a rotation of the circular element and the TDC position. This is convenient from the point of view of processing allowing simpler shift register controllers to be employed. The engine position and speed sensor may, as noted above, also be used to determine the direction of rotation of the engine. Thus the invention also provides a method of determining the direction of rotation of an engine wherein the passage of two position indicators of different angular width located on an encoder wheel is sensed by a sensor means comprising comparing data derived from an electrical signal corresponding to passage of said position indicators past said sensor means under engine operating conditions with data corresponding to an electrical signal for a first direction of rotation and indicating rotation direction in an opposite sense to said first direction where said derived data varies by a greater than acceptable margin from data corresponding to said first direction of rotation.

(34) Detection of reverse rotation is advantageously dependent upon the first and second position indicators being arranged as alluded to hereinabove, namely, such that the indicator of greater angular extent ordinarily passes the sensor after the indicator of smaller angular extent.

(35) Therefore, in accordance with a further aspect of the present invention, there is provided a method of determining the direction of rotation of an engine wherein the passage of two position indicators of different angular width located on an encoder wheel is sensed by a sensor means to provide an electrical signal corresponding to the passage of each respective position indicator, each signal having a leading edge and a trailing edge, the timing, $t_{sub.3}$, between passage of the trailing edges of the electrical signals corresponding to each position indicator being multiplied by a factor of n and compared with the timing, $t_{sub.4}$, of passage between the trailing edge of a first position indicator and the leading edge of the first position indicator on a subsequent revolution of the encoder wheel wherein n is less than $t_{sub.4} / t_{sub.3}$ and is calculated on the basis of rotation in the correct direction such that, when $nt_{sub.3} \leq t_{sub.4}$, rotation is determined as being in the correct direction and when $nt_{sub.3} > t_{sub.4}$, rotation is in the incorrect direction.

The above method of reverse rotation detection is applicable to any multitooth encoder provided that at least two position indicators of different angular width are spaced about the periphery of the encoder wheel.

See column 3.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabis et al. (US/6,208,131).

5. Cabis et al. applies as in claims 1 and 4 above but does not mention correction of threshold values based on changes in temperature or load. These are just routine error corrections well within the skill of one in the art. It would have been obvious to compensate for these effects by increasing the threshold value as temperature rises as well as shortening the expectation period as a function of load. It is well known metals expand when heated and engines slow down when loaded it would have been obvious to compensate for these events.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold Castro whose telephone number is (571) 272-4839. The examiner can normally be reached on Mon, Tues, Wed, Thurs 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yuen Henry can be reached on (571)-272-4856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

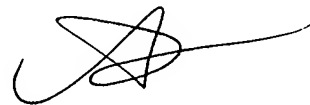
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnold Castro
Examiner
Art Unit 3747

AC



Henry C. Yuen
Supervisory Patent Examiner
Group 3700